

**ABSTRACT**

To equalize the performance of multiple channels travelling along diverse subsets of a main optical path, a channel-specific figure of merit for each channel is determined and a site-specific figure of merit for each site which is a drop site for at least one channel is determined. The channel-specific figure of merit for a particular channel could be a figure of merit (such as OSNR, Q or BER) for that channel at the particular channel's drop site, while the site-specific figure of merit for a particular drop site may be the average figure of merit for all channels received at the particular drop site. Equalization is then achieved by adjusting the power of each channel as a function of the difference between the channel-specific figure of merit for that channel and the site-specific figure of merit for that channel's drop site. Because measurements at each channel's drop site play a role in determining the power adjustment used for that channel, the actual path taken by that channel is taken into consideration during the equalization process.

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